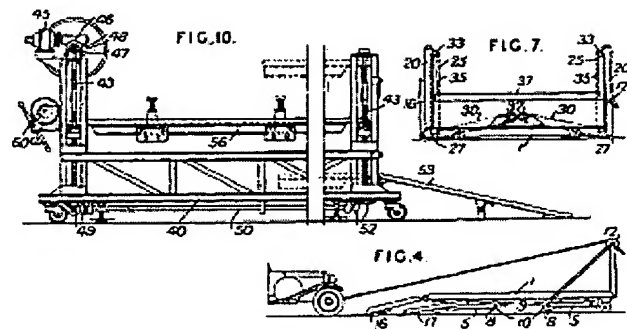


Improvements in and connected with workshop apparatus for raising and supporting motor and other vehicles

Patent number: GB347252
Publication date: 1931-04-21
Inventor:
Applicant: FREDERIC MERON
Classification:
 - international:
 - european: B66F7/02B, B66F7/06
Application number: GB19300002144 19300121
Priority number(s): GB19300002144 19300121

Abstract of GB347252

347,252. Load- handling machines; hoists with guided platforms. M RON, F., 45, Rue des Cheneaux, Sceaux-Robinson, Seine, France. Jan. 21, 1930, No. 2144. [A Specification was laid open to inspection under Sect. 91 of the Acts, Jan. 22, 1930.] [Classes 78 (iii) and 78 (iv).] A motor vehicle or the like is raised and/or supported above the ground to give access for repairs or adjustments by apparatus of the type comprising a horizontal wheeled frame with ramps at one end and at the other a winch for drawing the vehicle on to the frame. In the form shown in Fig. 4 a winch 12 draws the vehicle up ramps 16 on to the frame 1, the ramps are folded vertically and held by the link 17, the whole is lifted by a crane, and finally arms 5 are swung downwardly into a vertical position and held by struts pivoted to the axles 8 and detachably pinned to the platform at 9 so that the raised vehicle is supported on the wheels 10 carried by the arms 5. When not in use the struts are folded against the arms 5. In the form shown in Fig. 7 the wheeled frame 1 carries uprights 20, carrying pulleys 33 round which are wound ropes 35 supporting a pair of U-section bars 37. The vehicle is hauled by the winch 12 up the ramps 16 on to the U-section bars, which are then raised by rotating the drums 33 through chains and sprockets 25, 27, 30, and geared wheels 32 from a common winding device. In the form shown in Fig. 10 the vehicle is drawn by the winch 60a up the ramps 53 on to supporting members 56 which are then raised by nuts threaded on screws 43 which are supported by four corner uprights on the wheeled frame 40 and are rotated by a motor 45. The motor 45 drives the shaft 47 through a worm gear 46, the shaft 47 being connected by bevel gears 48 to the two screws 43 on the left side of Fig. 10. These two screws drive the other two screws 43 in synchronism through bevel gears 49, 52 and shafts 50.



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(Under this application, which was originally made under Section 91 of the Patents and Designs Acts, 1907 to 1928, a specification was laid open to Public inspection on January 22, 1930.)

PATENT SPECIFICATION

347,252

Application Date: Jan. 21, 1930. No. 2144/30.

Complete Accepted: April 21, 1931.

COMPLETE SPECIFICATION.



Improvements in and connected with Workshop Apparatus for Raising and Supporting Motor and other Vehicles.

I, FRÉDÉRIC MÉRON, of 45, Rue des Chéneaux, Sceaux-Robinson (Seine), France, a French Citizen, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to apparatus whereby motor road vehicles and other bodies may be readily raised and supported in workshops and garages to enable convenient access to be obtained to their various parts. Particularly is my invention useful where it is desired to effect repairs or adjustments to parts of a vehicle which normally would necessitate an operative to lie under the vehicle. The object of my invention is to provide a simple and strong construction of apparatus adapted to readily receive a motor vehicle or the like and to raise it to or support it at a position above the ground which will enable convenient access to be obtained to its lower parts.

I am aware that heretofore it has been proposed to provide apparatus for raising and supporting broken down motor road vehicles in which a pair of longitudinal girder-like frames are suspended below the axles of two pairs of road wheels by elevating screw devices so that by rotation of the elevating screws the longitudinal frame members can be raised to a plane approximately intersecting the axles of said wheels, a winch for drawing a vehicle on to the longitudinal frame members being provided and also longitudinal side ramps being hinged at their lower ends to enable a load to be translated sideways in to the longitudinal frame members. It has also been proposed heretofore to employ a two wheeled trailer in the form of a box-like body having a hinged wall or ramp at one end, the said body containing a platform which can be raised or lowered by a winding

device. It has also heretofore been proposed to provide workshop apparatus for repairing motor cars in which the vehicle is adapted to be run up a parallel pair of channel section girder like ramps pivoted to one end of a horizontal parallel pair of like members mounted on legs fitted with wheels at their lower ends, the other end of the said pair of horizontal members carrying a winch for drawing the vehicle up the ramp members.

Apparatus according to my invention comprises in combination a horizontal frame mounted on wheels the said frame comprising two longitudinal members each carrying a pair of said wheels, a pair of hinged extensions individually connected to or located contiguous to one end of each of said frame members so that they can be extended to serve as ramps and being adapted to be folded vertically, another pair of frame members extending vertically from the other end of the said longitudinal frame members, a winding device carried contiguous to or by said vertical frame members for drawing a motor or other vehicle up the said hinged extensions at the other end of the longitudinal frame members and means forming part of the apparatus for supporting and maintaining the loaded vehicle raised a greater distance above the ground than the diameter of the said wheels and the distance of the said longitudinal members above the ground when they are in the loading position subsequent to the arrival of the vehicle upon the said longitudinal members.

In order that my invention may be clearly understood and readily carried into effect I have appended hereto two sheets of drawings, somewhat diagrammatically illustrating embodiments of my invention, and wherein:—

Fig. 1 is a side elevation view showing a simple form of my invention in its out-of-use position.

Fig. 2 is a plan view of Fig. 1.

Fig. 3 is a side elevation view showing the device in the position whereby the vehicle is raised clear of the ground.

Fig. 4 is a side elevation view showing the apparatus in the condition wherein a motor vehicle is about to be drawn on to it.

Fig. 5 is a side elevation view showing the vehicle arranged on the apparatus and ready for being raised.

Fig. 6 is a side elevation view showing the vehicle raised.

Fig. 7 is a side elevation view showing a modification of my invention in which the transportable framework carries a relatively adjustable support for the vehicle.

Fig. 8 is a detail end elevation view to a larger scale showing the apparatus for raising the load.

Fig. 9 is a side elevation view showing the vehicle raised clear of the ground.

Figs. 10 and 11 are side elevation and plan views respectively of a further embodiment of my invention.

Referring to the drawings, and in particular to Figs. 1, 2 and 3, a carriage constructed according to the illustrated embodiment of my invention comprises a platform 1, 1¹ upon which are loaded the articles or motors which it is desired to move or raise, and which may be constituted by two U irons suitably distanced one from the other.

The distance separating the two U irons before-mentioned, may be fixed when the carriage is intended, for example, to receive vehicles having a constant width, but this distance may also be regulated either by providing any suitable means permitting the separation or the bringing together of the said irons forming the runways, or else by replacing these U irons by flat irons on which are arranged at each side corner irons the transverse position of which may be varied.

The platform 1, 1¹ is mounted on wheels 2 capable of pivoting on vertical axes so as to be adjustable in any direction; furthermore, the platform carries on its lower face fixed arms 3 which are bored at their lower extremity to receive a pair of transverse and axes 4.

On the transverse axes 4 are pivoted struts 5 capable of oscillating in the direction of the arrows α ; these struts being capable of swinging into a vertical position to occupy the position shown in Fig. 3 and, in this case, they are held in this position on one hand by stops 6 formed on the arms 3, and on the other hand by stays 7 hinged at one end to wheel axes 8 carrying wheels 10 at the lower

ends of the struts 5 and at their other ends detachably connected to the platform by means of bolts 9.

The wheels 10 permit translation of the carriage when the platform is in the raised position.

Above the platform and at one of its ends is fixed a vertical frame 11 carrying a windlass 12 on which can be wound a draw cable 13; the frame 11 is strengthened by stays 14 fixed at one end to the upper part of the frame 11 and at the other end to the platform itself.

At the other end of the platform, is pivoted on hinges 15 a frame 16 formed by two U bars similar to those constituting the platform itself, and which frame may be lowered so that its end rests on the ground in such manner as to form an inclined plane permitting access to and forming a continuity of the platform.

When the carriage is loaded, the frame 16 is held in its raised position by a pair of bars 17 which are pivoted at their normally lower ends to that platform, and at their other ends are detachably connected to the frame 16 by means of bolts 18.

The carriage operates in the following manner:

The struts 5 being raised and occupying the position shown in Fig. 1 are held close against the underside of the platform by any suitable retaining device. The stays 7 rest at their free ends on the transverse axes 4. In this position the carriage may be moved in any direction on its wheels 2 and may be transported to any suitable place to be loaded; it is possible to use it in this form for the transport of all classes of material.

To load a vehicle on the carriage, as shown in Fig. 4; the carriage having been brought in front of the vehicle 19 which is to be loaded, the frame 16 is lowered so as to form an inclined plane, the carriage being suitably directed so that the two U irons which constitute the said inclined plane are in front of the vehicle to be loaded.

The cable 13 is then unwound and its free end is attached for example, to the axle of the vehicle 19, the windlass 12 is operated and owing to the action thereof the vehicle first mounts the inclined plane and then passes on to the platform until the two axes rest through the intermediation of their wheels on the said platform; the frame 16 is then raised and fixed vertically by means of the members 17; the unit formed by the carriage and the vehicle loaded thereon is then such as is represented on Fig. 5; the vehicle loaded may then be moved and be brought underneath fixed or movable

lifting tackle or underneath a travelling crane by means of which the whole is raised to a height sufficient to permit the struts 5 to be extended to vertical positions.

The struts 5 are then extended and fixed in their vertical position by stays 7; the hoisting apparatus is actuated afresh until the carriage rests on the wheels 10; it is then detached from the carriage which can be moved to the place where the repairs or work intended to be done may be carried out.

The repairs being finished, the unloading operations of the vehicle are carried out in the same way but conversely, that is to say, the whole is first raised by means of a hoisting device, the struts are raised, the whole is lowered until the carriage rests on the wheels 2, the hoisting device is detached, the carriage is moved on the wheels 2 up to the point of unloading, the frame 16 is lowered and the vehicle is unloaded.

Referring to Figs. 7, 8 and 9 of the drawings the two longitudinal frame bars 1—1¹ are formed with vertical uprights 20, 21 at each end thereby providing four corner posts. This structure can be transported on wheels 2, and a pair of U section runways or ramps 16, hinged to the front end of the frame bars 1—1¹. In the embodiment the vehicle to be repaired is run up the ramps 16 on to a pair of longitudinal U section bars 37—38 normally resting upon the frame bars 1—1¹ as shown in Fig. 8 and adapted to be raised and lowered by suitable tackle. Suitable raising and lowering mechanism consists of a pulley 33 at the upper end of each upright 20, 21 on each of which is wound a length of cable 35 detachably connected at 36 to one end of one of the U section bars 37—38. The shaft 33^a of each pulley has mounted on it a sprocket or a pulley 22 over which is passed an endless chain or an endless cable 24, 25 also passed round a like wheel or pulley 26, 27 mounted at each end of a transverse shaft 28 at one end of the frame members 1—1¹ and a transverse shaft 29 at the other end. The shafts 29 can be rotated from a common source so as to simultaneously lift both ends of the U section bars 37—38, and this can be effected by a pair of suitably geared winch wheels 32 connected by endless chains or cables 30, 31 respectively to wheels 26^a on the shafts 29. The uprights 20, 21 are preferably connected by transverse stays or bridge members 39. A winch 12 is provided for winding the vehicle 19 on to the supports 37, 38.

Referring to Figs. 10 and 11 of the accompanying drawings I have shown a

girder framework longitudinal base members 40 mounted on castor wheels 41 and carrying four corner vertical frames 42 preferably of skeleton girder form and each accommodating a vertical axially rotatable feed screw 43 supported in suitable bearings the upper and lower ends of the frames 42. Across the upper ends of the uprights 42 at one end of the structure is a bridge 44 supporting at its centre a suitable motor 45 which through the medium of worm or other suitable gearing 46 drives a transverse shaft 47 geared at its ends by suitable bevel gear wheels 48 to the feed screws 43 at the end of the structure containing the motor 45. The lower ends of these said feed screws are geared by suitable bevel gear wheels 49 to the rear ends of a pair of longitudinal shafts 50 supported by suitable bearings 51 depending from the longitudinal frame members 40 and geared at their front ends by suitable bevel gear wheels 52 to the lower ends of the feed screws 43 at the front end of the structure.

The simultaneous rotation of the said feed screws is utilised to raise and lower a support upon which a motor car or other suitable body is adapted to be delivered for instance by running it up an inclined ramp constituted by a pair of parallel channel section runways 53, hinged as at 54 to brackets on the base frame 40 so that the inner ends of the runways align with a pair of shallow channel section longitudinal members 56 constituting the support adapted to be raised and lowered by the rotation of the feed screws 43.

The ends of the members 56 are supported on transverse bars 58 carrying at their extremities internally threaded bosses or relatively immovable nuts threaded on to the feed screws 43 to obtain the desired feed screw elevating action.

Supported slightly beneath and parallel to each longitudinal support member 56 is a longitudinal rail or guide 57, and across these two rails or guides is, or are supported one, or two transverse frames 59 each supporting one or two, lifting jacks 60 each preferably adjustable along its frame 59. By this means a selected wheel or wheels of a motor vehicle may be jacked up relative to the support members 56, and the jacks can be adjusted to different sizes of vehicles.

A winch 60^a is preferably provided at the rear end of the framework for drawing loads up the ramp 53 on to the support members 56, and if desired the ramp members 53 can be connected transversely at one or more points by a girder or bar 61, and also suitable supports 63 may depend from the ramp members to enable

them to receive heavy loads without sagging. The uprights 42 are preferably bridged at their upper ends by transverse frame members or girders to assist in maintaining the framework rigid. The vehicle can be pushed down the hinged ramps 16 and 53 when repairs are finished, the winch 12 or 60^a controlling its descent.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

(1) Apparatus for raising and supporting motor and other vehicles whereby they may be raised above the ground for convenience of access and movement along the ground comprising in combination a horizontal frame mounted on wheels, the said frame comprising two longitudinal members each carrying a pair of said wheels, a pair of hinged extensions individually connected to or located contiguous to one end of each of said frame members so that they can be extended to serve as ramps and being adapted to be folded vertically, another pair of frame members extending vertically from the other end of the said longitudinal frame members, a winding device carried contiguous to or by said vertical frame members for drawing a motor or other vehicle up the said hinged extensions at the other end of the longitudinal frame members and means forming part of the apparatus for supporting and maintaining the loaded vehicle raised a greater distance above the ground than the diameter of the said wheels and the distance of the said longitudinal members above the ground when they are in the loading position subsequent to the arrival of the vehicle upon the said two longitudinal members.

(2) Apparatus according to claim 1 comprising a wheeled framework having relatively movable arms normally held clear of the ground but adapted to be moved to vertical positions depending from the framework so as to maintain the framework raised above its normal plane, the said arms constituting the said means for supporting and maintaining the vehicle raised above the ground.

(3) Apparatus according to claim 2 wherein said arms are each hinged at one end and are located adjacent the ends of the framework and are normally held with their free ends clear of the ground, said free ends carrying runners or wheels, the

arms being adapted to be swung to vertical positions depending from the framework to support it in an elevated position, stays pivotally connected at one end to the free ends of the arms being detachably connected at their other ends to the framework and adapted when not in use to be folded close against said arms.

(4) Apparatus according to claim 1, 2 or 3 wherein said framework comprises two longitudinal U section bars or channel section members to one end of which is fixed a pair of vertical frame members carrying a winding winch for drawing bodies on to the U section bars or channel section members, the said hinged extensions also comprising two U section bars or channel section members hingedly supported contiguous to the other end of the longitudinal U section bars or channel section members so that they can be swung to a vertical plane closing one end of the said longitudinal U section bars or channel section members.

(5) In apparatus according to claim 1, a pair of longitudinal U section members parallel with said longitudinal frame members and suspended from cables or the equivalent thereof passed over guides or pulleys at the upper ends of uprights carried by the longitudinal frame members and connected to a common winding device.

(6) Apparatus according to Claim 1 including a number of vertical feed screws driven from a common source and adapted to raise and lower a support movable relatively to said longitudinal frame members, said feed screws being supported by four corner uprights of said framework, a motor driving a shaft geared to two of said feed screws, and a geared connection therefrom to the other two feed screws.

(7) Apparatus according to Claim 6 wherein a pair of longitudinal U section supports is carried by nuts or their equivalent threaded on to said feed screws said U section supports being adapted to receive the motor vehicle or other body to be raised by the apparatus.

(8) Apparatus for manipulating motor vehicles and other bodies whereby they may be raised above the ground substantially as described with reference to the accompanying drawings.

Dated this 21st day of January, 1930.

RAYNER & Co.,

5, Chancery Lane, London, W.C. 2,
Agents for the Applicant.

Fig. 1.

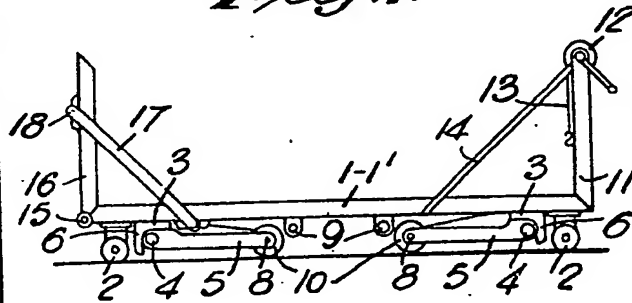


Fig. 3.

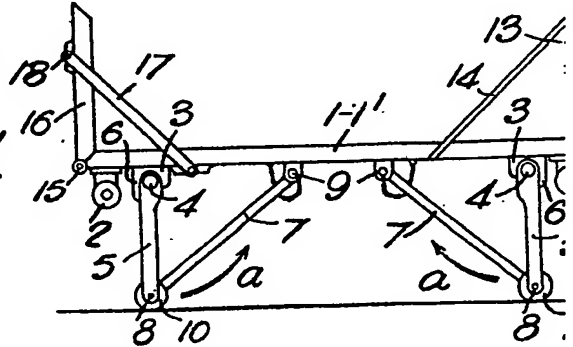


Fig. 2.

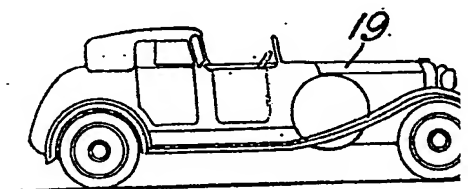
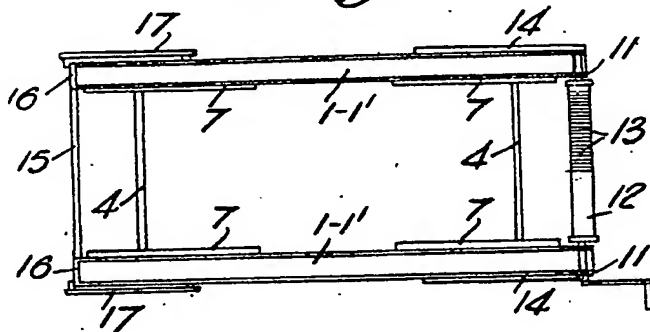


Fig. 6.

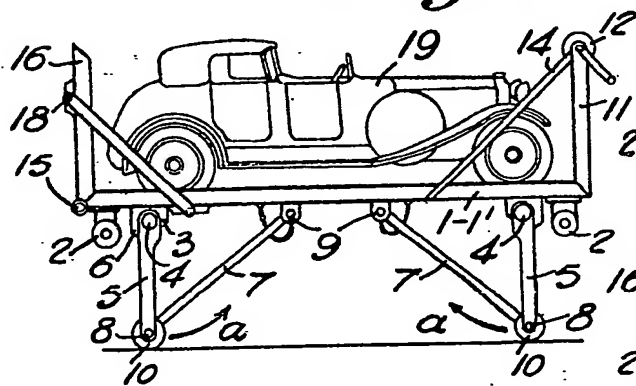


Fig. 7.

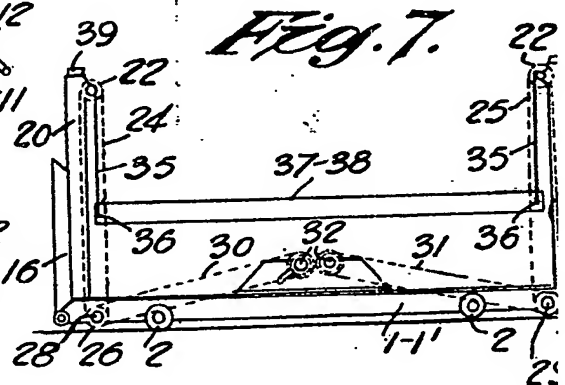


Fig. 3.

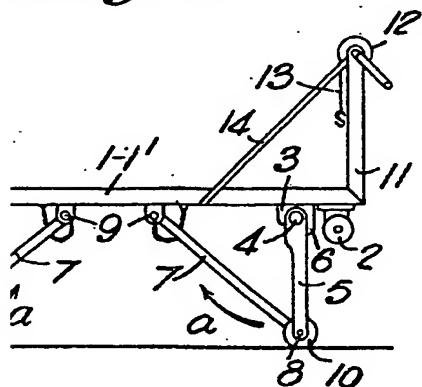


Fig. 5.

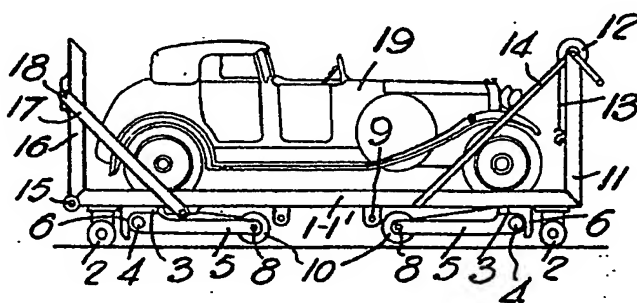


Fig. 4.

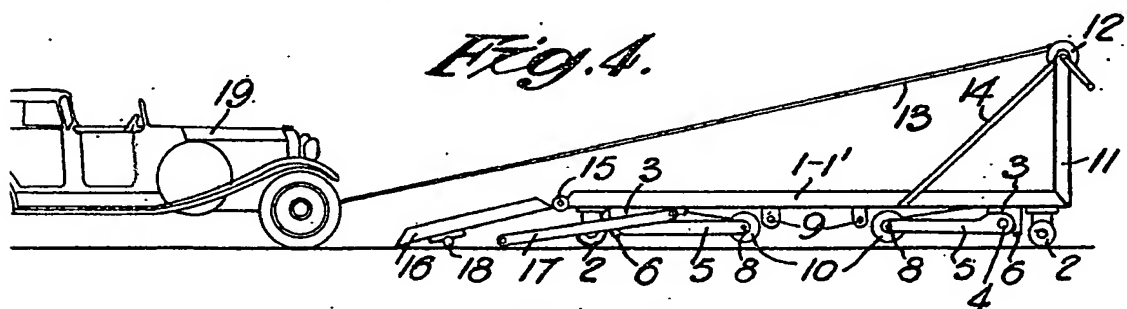


Fig. 9.

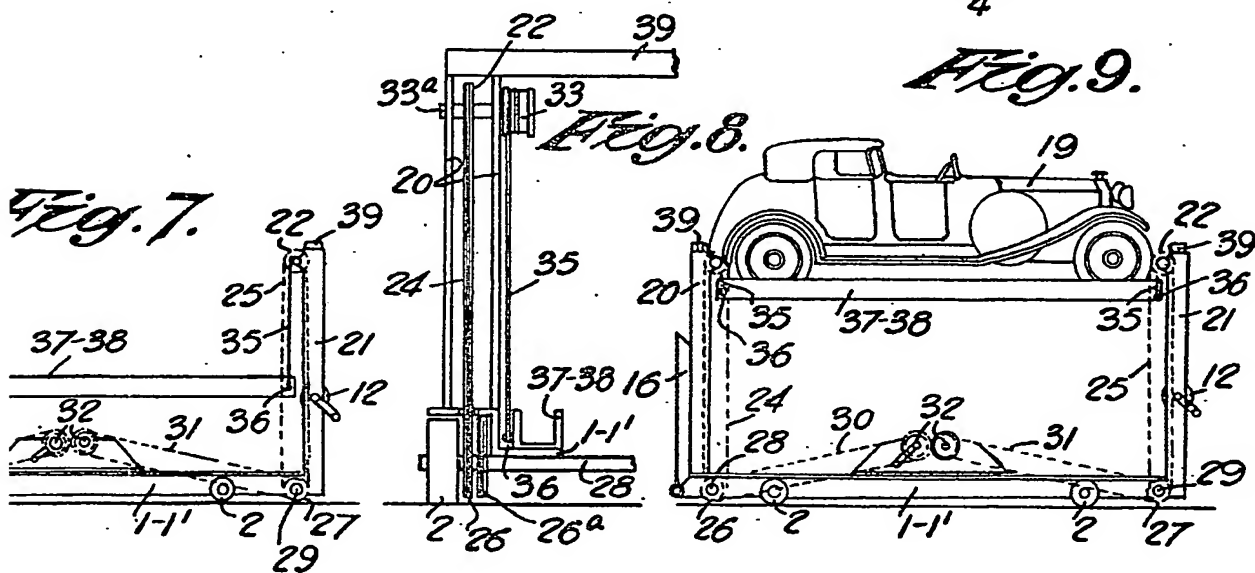


Fig. 1.

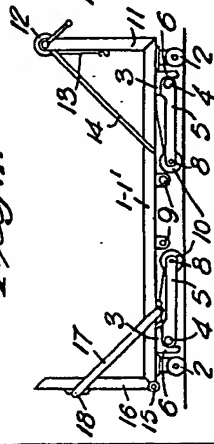


Fig. 3.

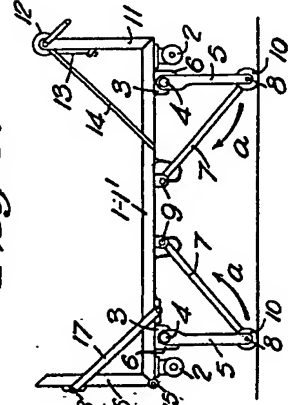


Fig. 5.

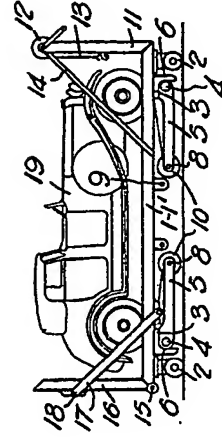


Fig. 2.

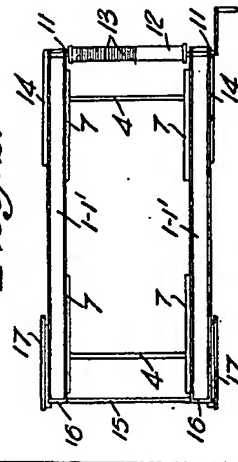


Fig. 4.

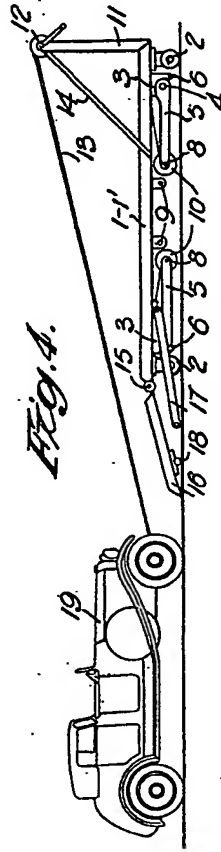


Fig. 6.

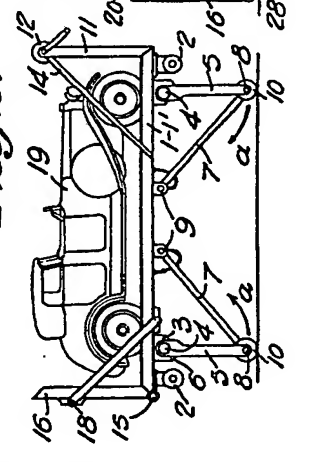


Fig. 7.

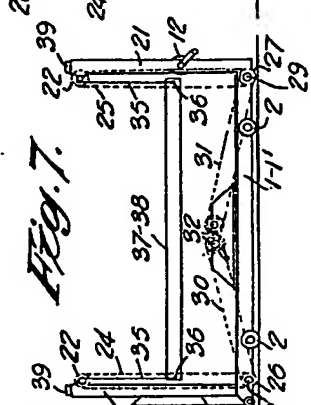


Fig. 8.

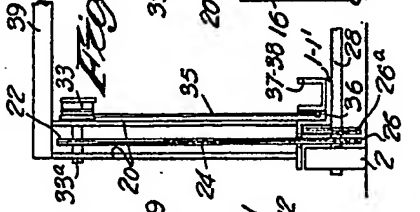
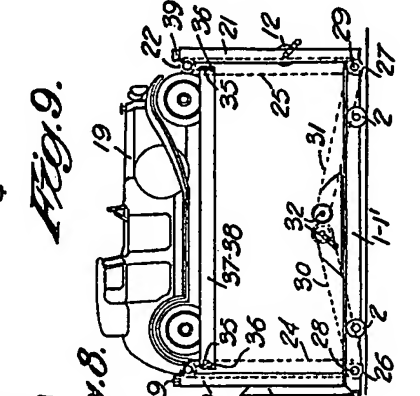
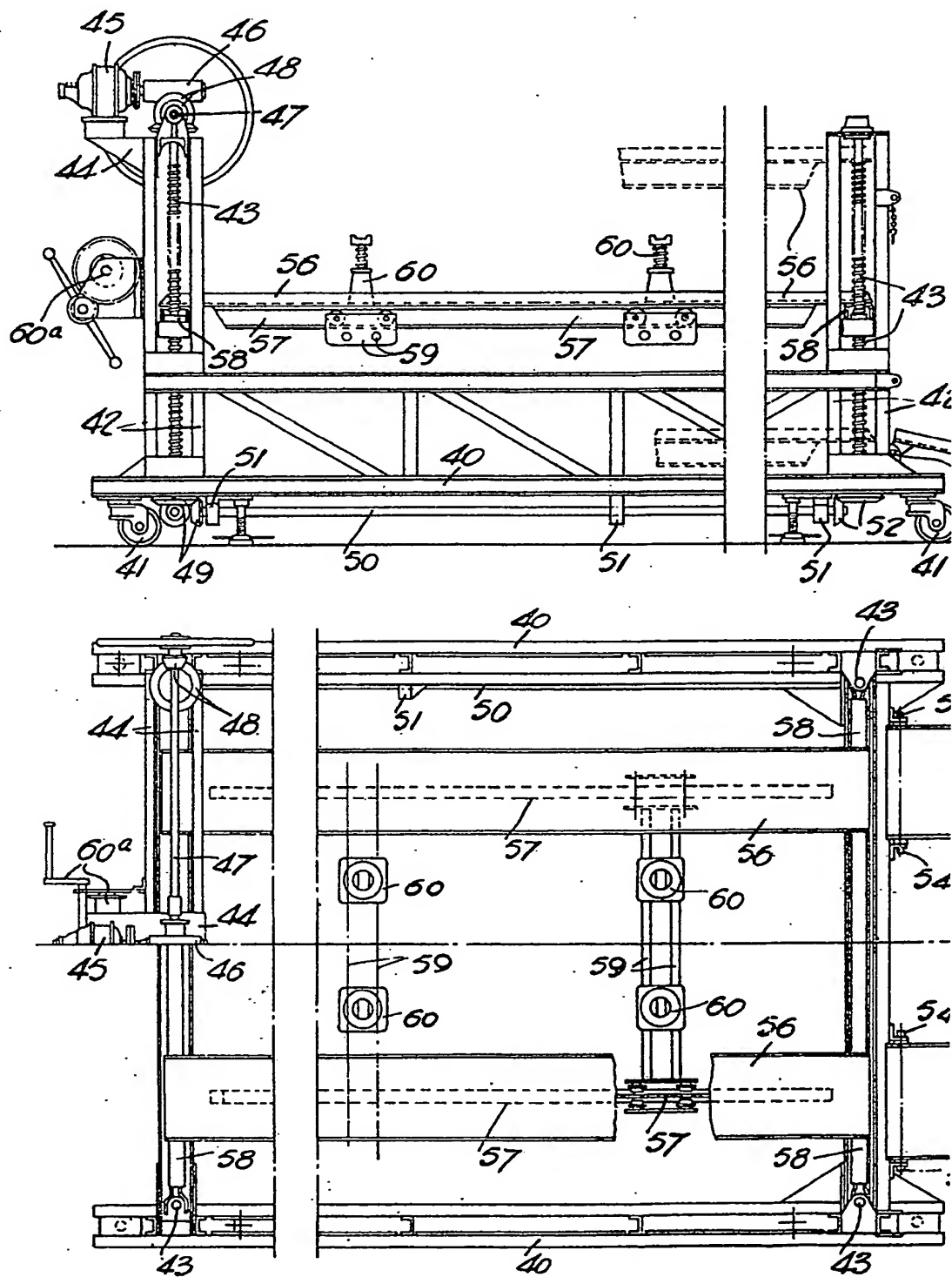


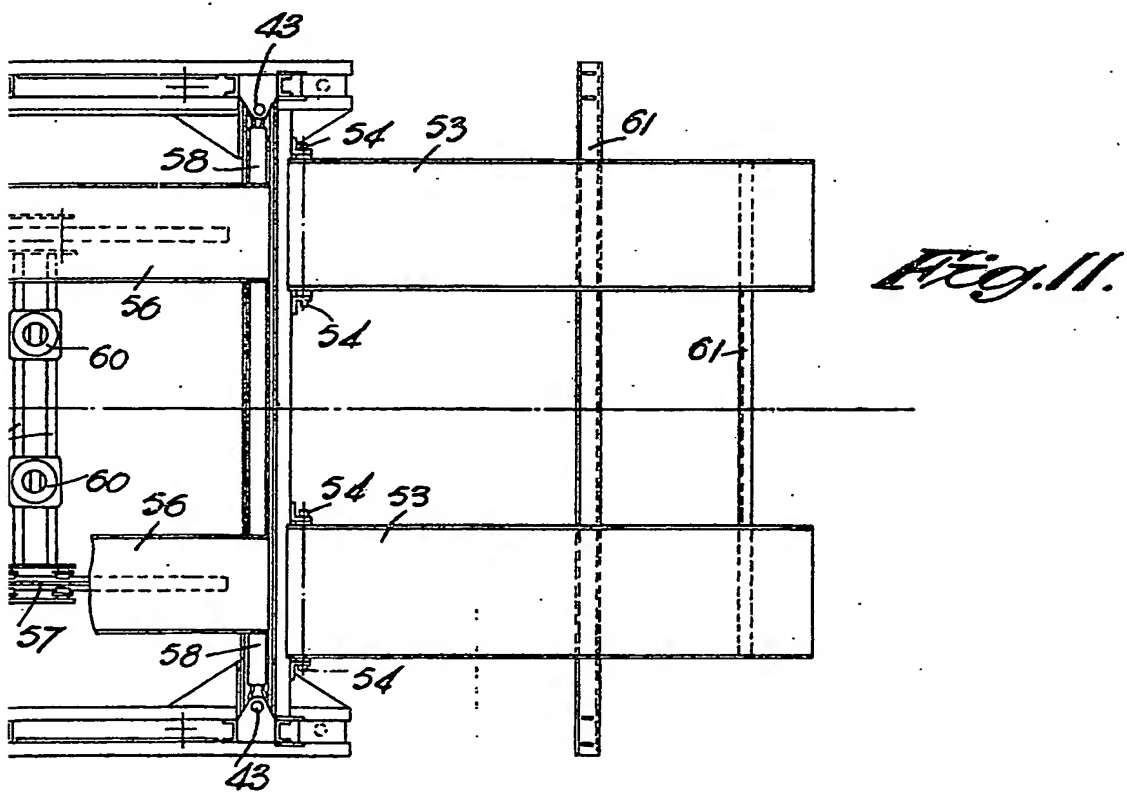
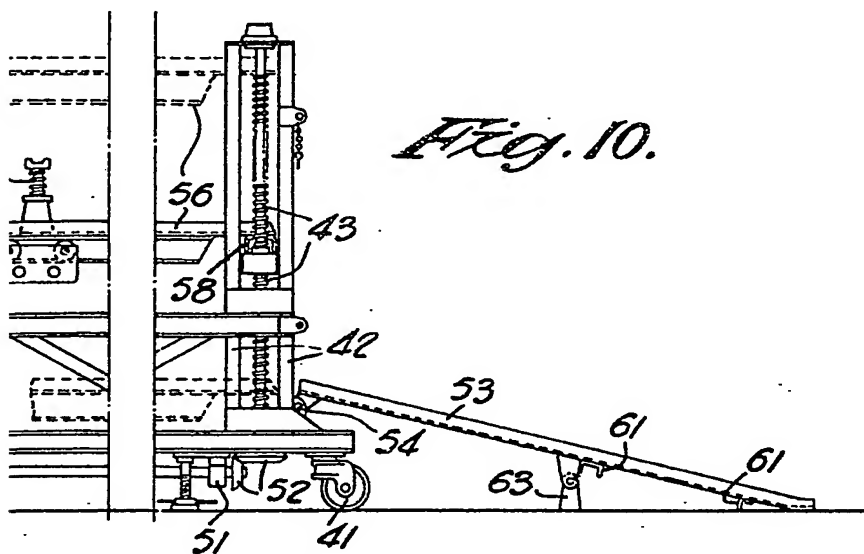
Fig. 9.



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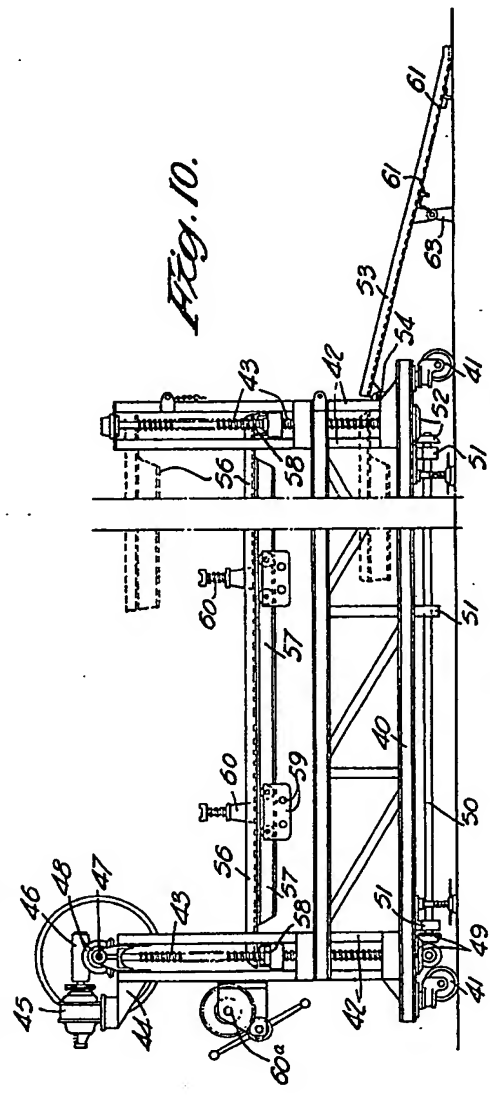


Fig. 10.

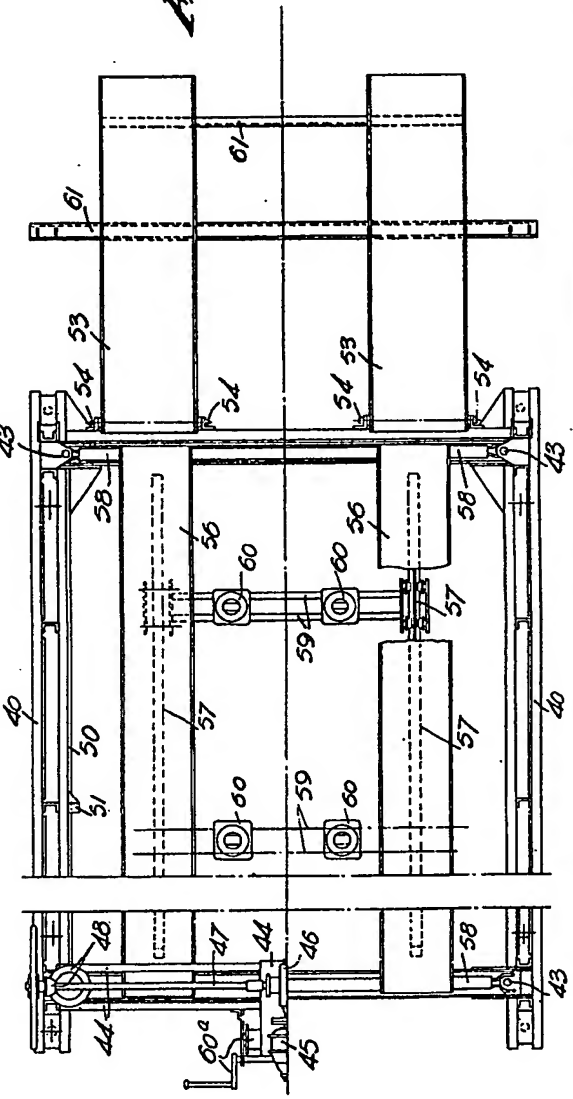


Fig. 11.

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